WILD FRONTIER ECOLOGY

School Road, Terrington St John

Ecology Report

September 2021

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The data which we have prepared and provided is accurate, and has been prepared and provided in accordance with the CIEEM's Code of Professional Conduct. We confirm that any opinions expressed are our best and professional bona fide opinions.

This report conforms to the British Standard 42020:2013 Biodiversity – Code of practice for planning and development.

Contents

1. Non-technical Summary

Wild Frontier Ecology Ltd. (WFE) was commissioned by Peter Humphrey Associates on behalf of their client to undertake an Ecological Assessment of a site at School Road, Terrington St John in Norfolk. The proposed development is to convert the barn on site into a residential dwelling with associated gardens and parking.

A site visit was undertaken in July 2021 to complete an Extended Phase 1 Habitat Survey and building inspection. The site consists of the barn which was surrounded by tall ruderal vegetation with two sections of hedgerow and areas of scrub around the peripheries. Current plans indicate that the hedgerows will be retained on site post-development. The barn on site was visually inspected and was found to be a corrugated metal barn in poor condition which was unsuitable for roosting bats.

There are no designated sites located within 2km of the proposed development and so no impacts during the construction phase are expected. Considering this development will give rise to a proportionately minor increase in the local population, and given the separation distances between the proposed development site and designated sites, no long-term impacts (e.g. from increased recreational use) are also expected.

Nesting birds are almost certain to use the hedgerows and shrubs around the edge of the site. The barn on site also provides sub-optimal habitat for nesting birds. Best practice mitigation advice, including timing of works, will need to be adopted to reduce possible impacts to breeding birds. Best practice mitigation advice is also provided for terrestrial species, such as hedgehogs or common toads, and nocturnal species, such as bats and moths.

Enhancement advice is provided and where followed it has opportunity to provide benefits to local wildlife in the medium- and long-terms.

2. Background

WFE was commissioned by Peter Humphrey Associates on behalf of their client to undertake an Ecological Assessment of a proposed new residential dwelling at School Road in Terrington St John (centred on National Grid Reference: TF 5390 1284, see Figures 1 & 2)

The proposed development will involve clearance of the site and the conversion of the barn into a residential dwelling (see Figure 3).

Figure 1: Site location in relation to wider area context (as shown by red line boundary)

©Google

Figure 2: Site plan (as provided by client)

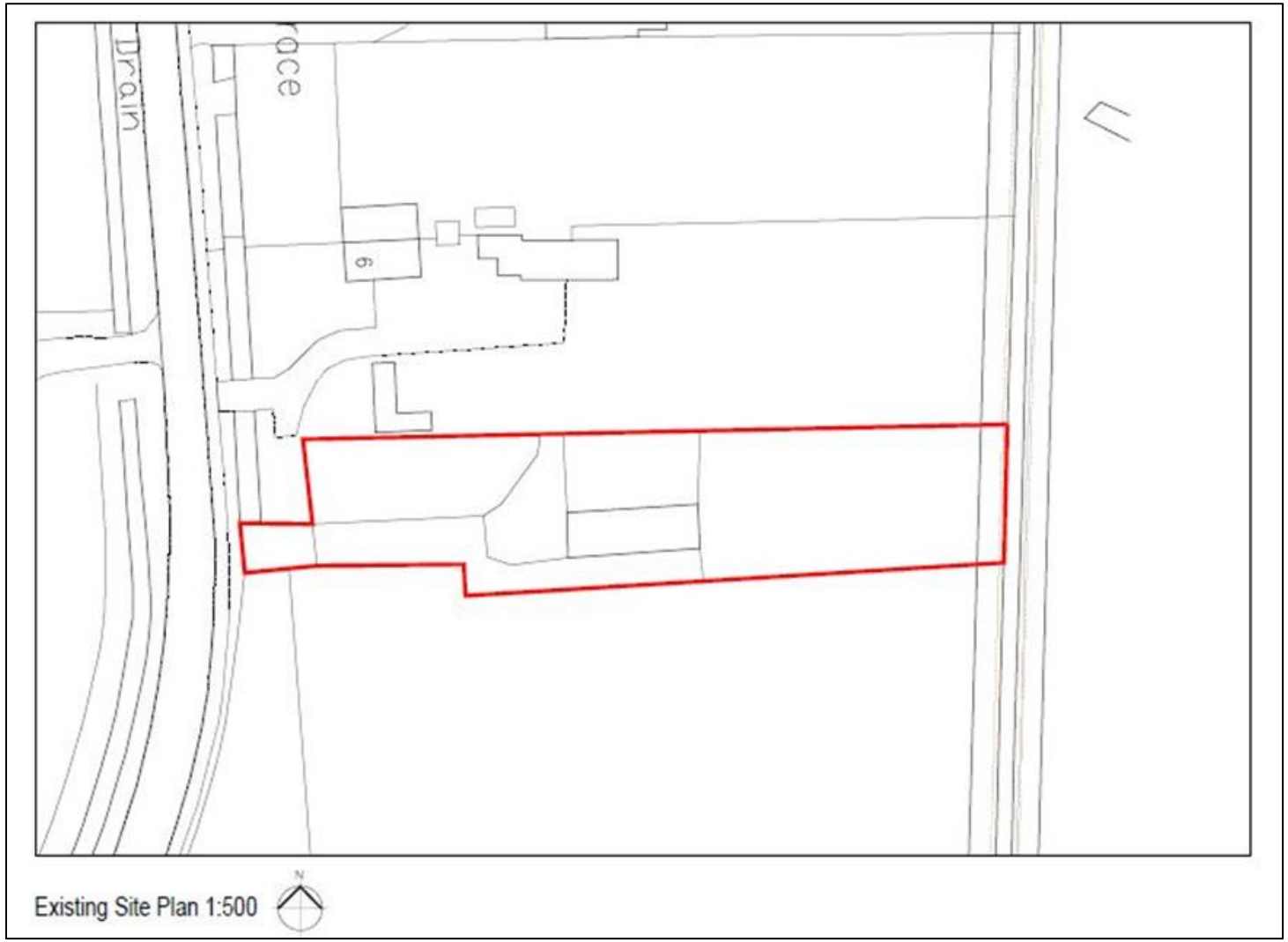
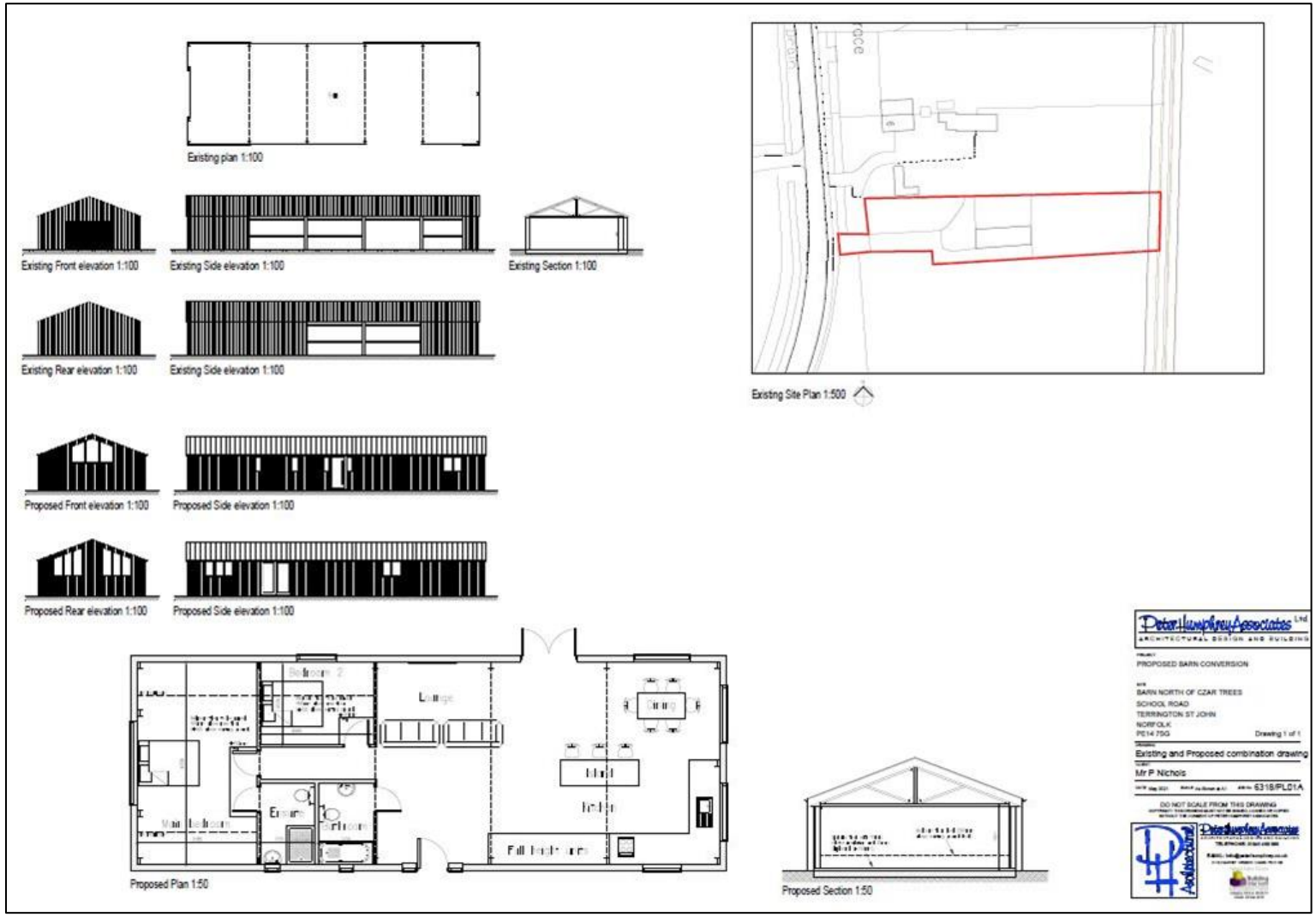


Figure 3: Proposed development plan (as provided by client)



3. Relevant Legislation and Policy

3.1 Statutory and Non-statutory Site Designations

3.1.1 International Site Designations

The European Council Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (92/43/EEC) as amended directs the designation of important wildlife sites through the European Community as Special Areas of Conservation (SACs), and gives statutory protection to habitats and species listed in the Directive as being threatened or of community interest. Sites identified as candidate SAC (cSAC) are provided with the same level of protection as SAC.

Annex I of 92/43/EEC as amended lists habitat types which are regarded as being of European importance. Included within these are a number of 'priority habitat types' which are habitats regarded as being in danger of disappearance and whose natural range falls broadly within the European Union. This European law had been transposed into UK legislation by The Conservation (Natural Habitats) &c Regulations 1994, now replaced by the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019.

Habitats of European-wide importance for birds are listed under the EC Wild Birds Directive (79/409/EEC) as amended. Habitats designated under this Directive are notified as Special Protection Areas (SPAs) and are identified for holding populations > 1% of the reference population as defined in Appendix 4 of the SPA review of bird species listed in Annex 1 of the same Council Directive. Sites identified as potential SPA (pSPA) are provided with the same level of protection as SPA. This has also been transposed into UK legislation by the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019.

Wetlands of International Importance are designated under the Ramsar Convention.

3.1.2 National (UK) Site Designations

National ecological designations, such as Sites of Special Scientific Interest (SSSIs) and National Nature Reserves (NNRs) are also afforded statutory protection. SSSIs are notified and protected under the jurisdiction of the Wildlife and Countryside Act 1981 (as amended). SSSIs are notified based on specific criteria, including the general condition and rarity of the site and of the species or habitats supported by it.

3.1.3 Non-Statutory County Site Designations

Local authorities may designate certain areas as being of local conservation interest. The criteria for inclusion may vary between areas. Most individual counties have a similar scheme; within Norfolk such sites are designated as County Wildlife Sites (CWS). Designation of such sites does not itself confer statutory protection, but they are a material consideration when planning applications are being determined.

3.2 Species Designation and Protection

3.2.1 Bats

All bat species are listed under Schedule 2 of the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019. Bats and their roosts also receive protection

from disturbance from by the Wildlife and Countryside Act 1981 (as amended). This protection extends to both the species and roost sites. It is an offence to kill, injure, capture, possess or otherwise disturb bats. Bat roosts are protected at all times of the year (making it an offence to damage, destroy or obstruct access to bat roosts), regardless of whether bats are present at the time.

3.2.2 Badgers

The Protection of Badgers Act 1992 makes it unlawful to knowingly kill, capture, disturb or injure an individual badger *Meles meles*, or to intentionally damage, destroy or obstruct an area used for breeding, resting or sheltering by badgers (i.e. a sett).

3.2.3 Riparian Mammals

The water vole *Arvicola amphibius* is protected in accordance with Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). It is an offence to intentionally damage, destroy or obstruct access to any structure or place which water voles use for shelter or protection, or to disturb water voles whilst they are using such a place. It is also an offence to kill, injure, capture or possess water voles.

Otters *Lutra lutra* are protected in accordance with Schedule 5 of the Wildlife and Countryside Act 1981 (as amended), and under Schedule 2 of the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019. It is an offence to intentionally kill, injure or take an otter from the wild, or to intentionally or recklessly damage, destroy or obstruct access to any habitat used by otters or to disturb the otters which make use of those habitats.

3.2.4 Birds

All bird species are protected under the Wildlife and Countryside Act 1981 (as amended). This prevents killing or injuring any bird or damaging or destroying nests and eggs. Certain species (including barn owl *Tyto alba*) are also listed under Schedule 1 of the Wildlife and Countryside Act 1981 (as amended), which prohibits intentionally or recklessly disturbing the species at, on or near an 'active' nest.

The British Trust for Ornithology (BTO) lists Birds of Conservation Concern (BoCC), which fall into three categories: Red-listed - species of high concern; Amber-listed - species of medium concern; and Green-listed - species of lower concern[1]. Species are placed on these lists based, among other criteria, on the percentage decline of breeding or wintering populations in recent years. These lists do not indicate rarity for the species concerned, and many listed species are currently common and widespread.

3.2.5 Reptiles

All native reptiles are listed on Schedule 5 of the Wildlife and Countryside Act 1981 (as amended), and are afforded protection under Sections 9(1) and 9(5). For the reptile species occurring in Norfolk, adder *Vipera berus*, grass snake *Natrix helvetica*, slow-worm *Anguis fragilis* and common lizard *Zootoca vivipara*, this protection prohibits deliberate or reckless killing and injury but does not include habitat protection.

3.2.6 Great Crested Newts

[1] Eaton, M. Et al (2015). Birds of Conservation Concern 4. The Population Status of Birds in the UK, Channel Islands and Isle of Man. British Birds 108: 708-746.

The great crested newt (GCN) *Triturus cristatus* is listed under Schedule 2 of the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019. The species is also protected by Sections 9(4) and 9(5) of the Wildlife and Countryside Act 1981 (as amended). It is an offence to knowingly or recklessly kill, injure, disturb, handle or sell the animal, and this protection is afforded to all life stages. It is unlawful to deliberately or recklessly damage, destroy, or obstruct the access to any structure or place used for shelter or protection; this includes both the terrestrial and aquatic components of its habitat.

3.2.7 Plants

Schedule 8 of the Wildlife and Countryside Act 1981 (as amended) lists plant species which are afforded special protection. It is an offence to pick, uproot or destroy any species listed on Schedule 8 without prior authorisation, and all plants are protected from unauthorised uprooting (i.e. without the landowner's permission) under Schedule 13 of the Wildlife and Countryside Act 1981 (as amended).

A Vascular Plant Red List for England[2] provides a measure of the current state of England's flora measured against standardised IUCN criteria. Any taxon that is threatened – Critically Endangered (CR), Endangered (EN), Vulnerable (VU) – or Near Threatened (NT) does not have statutory protection but should be regarded as a priority for conservation in England. It should be noted that 'threat' is not synonymous with 'rarity'; some of the species concerned remain relatively common and widespread.

It is an offence to plant or cause to spread in the wild of certain plant species under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended). Plant species relevant to the East of England are as follows:

Himalayan Balsam *Impatiens glandulifera*
Variegated yellow archangel *Lamiastrum galeobdolon* ssp *argentatum*
Virginia creeper *Parthenocissus quinquefolia*
False acacia *Robinia pseudoacacia*
Water fern *Azolla filiculoides*
Giant Hogweed *Heracleum mantegazzianum*
Knotweed species including Japanese knotweed *Fallopia japonica*
Parrot's feather *Myriophyllum aquaticum*
Floating pennywort *Hydrocotyle ranunculoides*
Rhododendron *Rhododendron ponticum*
Giant rhubarb *Gunnera tinctoria*
New Zealand Pigmyweed *Crassula helmsii*
Waterweeds *Elodea* spp.

All waste containing Japanese knotweed comes under the control of Part II of the Environmental Protection Act 1990 and is classified as controlled waste.

3.3 Priority Species and Habitats

Other priority species and habitats which are a consideration under the National Planning Policy Framework (NPPF) 2019, placing responsibility on Local Planning Authorities to aim to conserve and enhance biodiversity and to encourage biodiversity in and around developments. There is a general biodiversity duty in the Natural

[2] Stroh P.A., Leach S.J., August T.A., Walker K.J., Pearman D.A., Rumsey F.J., Harrower C.A., Fay M.F., Martin J.P., Pankhurst T., Preston C.D. & Taylor I. 2014. A Vascular Plant Red List for England. Botanical Society of Britain and Ireland, Bristol.

Environment and Rural Communities (NERC) Act 2006 (Section 40) which requires every public body in the exercising of its functions to 'have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity'. Biodiversity, as covered by the Section 40 duty, includes all biodiversity, not just the Habitats and Species of Principal Importance.

Section 41 of the NERC Act lists a number of species and habitats as being Species/Habitats of Principal Importance. These are species/habitats in England (commonly known as Priority Habitats/ Species) which had been identified as requiring action under the UK BAP, and which continue to be regarded as conservation priorities under the UK Post-2010 Biodiversity Framework. The protection of either Priority Species or Habitats is not statutory, but "specific consideration"[3] should be afforded by Local Planning Authorities when dealing with them in relation to planning and development control. Also, there is an expectation that public bodies would refer to the Section 41 list when complying with the Section 40 duty.

Widespread Priority Habitats in East Anglia include:

Arable field margins
Traditional orchards
Hedgerows
Eutrophic standing waters
Ponds
Rivers
Lowland calcareous grassland
Lowland dry acid grassland
Lowland meadows
Lowland fen
Coastal and floodplain grazing marsh
Reedbeds
Lowland mixed deciduous woodland
Wet woodland
Wood-pasture and parkland

Widespread Priority Species in East Anglia (which have no specific legal protection) include:

Common toad *Bufo bufo*
Hedgehog *Erinaceus europaeus*
Brown hare *Lepus europaeus*
Harvest mouse *Micromys minutus*
Small heath butterfly *Coenonympha pamphilus*
Wall butterfly *Lasiommata megera*
Cinnabar moth *Tyria jacobaeae*

Many red-listed bird species are also Priority Species.

[3] JNCC (2015) UK BAP priority species and habitats
http://www.naturalengland.org.uk/ourwork/conservation/biodiversity/protectandmanage/habsandspeciesimportance.aspx

3.4 Local Species and Habitat Designations

The Norfolk Biodiversity Partnership (NBP) has published Habitat and Species Action Plans for selected species occurring within Norfolk. Each Action Plan lists current actions and defines objectives and targets.

The NBP has also published Biodiversity Supplementary Planning Guidance[4] for Norfolk. This document sets out the key considerations relating to wildlife and biodiversity that should be taken into account for all Norfolk development proposals.

3.5 Policy

The overarching policy guidance for biodiversity is included within the National Planning Policy Framework (NPPF). Section 15 of this document (Conserving and Enhancing the Natural Environment) outlines the approach that Local Authorities should adopt when considering ecological issues within the planning framework, including the principles of the Mitigation Hierarchy. This espouses that in addressing impacts on valued features, avoidance should be the first option considered, followed by mitigation (minimising negative impacts). Where avoidance and mitigation are not possible, compensation for loss of features can be used as a last resort. Paragraph 180(d) of the NPPF requires opportunities to incorporate biodiversity improvements in and around development as part of the design, especially where this can secure measurable **net gains** for biodiversity or enhance public access to nature where this is appropriate. Paragraph 179 specifies that plans should identify, map and safeguard components of local wildlife-rich habitats and wider ecological networks, including locally designated sites (such as CWS). It also promotes the conservation, restoration and enhancement of priority habitats and ecological networks and the protection and recovery of priority species.

[4] http://www.norfolkbiodiversity.org/assets/Uploads/Planning-guidlines2.pdf

4. Methods

4.1 Report Objectives

The purpose of this ecological report is to describe the habitats, protected and valued species potential, any designated nature conservation sites, and any other ecological issues within the potential zone of influence of the proposed development. This has allowed for an ecological assessment of the proposed development to be completed. Avoidance measures, mitigation, compensation and ecological enhancements are specified with the intention of achieving net gain as specified within the NPPF.

4.2 Desk Study

A data search was completed with Norfolk Biodiversity Information Service (NBIS) in August 2021. The data search obtained biological records and information on any designated nature conservation sites within the proposed development site and the surrounding 2km area. The Multi-Agency Geographic Information for the Countryside (MAGIC) website was also reviewed to identify nature conservation sites and protected species licensing data within 2km of the proposed development site.

The proposed development site and nearby surrounding area was reviewed using Ordnance Survey (OS) maps and aerial photographs with the aim of identifying potential ecological issues or sensitive habitats, such as nearby waterbodies or connected hedgerows. National Character Area profiles[5] were consulted for site context where appropriate.

4.3 Extended Phase 1 Habitat Survey

An Extended Phase 1 Habitat Survey of the site was undertaken on 15/07/2021 by Katrina Salmon BSc. The survey was undertaken on a mild day with air temperature of 17ºC, 100% cloud cover, no precipitation and wind speed estimated at 2 on the Beaufort Wind Scale.

The survey method followed the Joint Nature Conservancy Council (JNCC) guidelines[6], with the methods being 'extended' to include a general evaluation of potential habitats for any protected or valued species. Photographs were taken to record key features/views.

Only habitats on the landholding were available to survey. Habitats outside of the landholding were appraised as far as possible by viewing from the landholding, public footpaths and roads, as well as by using publicly accessible aerial photographs.

The hedgerows are rated against the criteria for Priority Habitats, which is as follows:

"*Species-rich hedgerows may be taken as those which contain 5 or more native woody species on average in a 30 metre length, or 4 or more in northern England, upland Wales and Scotland. Hedges which contain fewer woody species but a rich basal flora of herbaceous plants should also be included but practical criteria for identifying them have yet to be agreed. Many of the thin straight hawthorn hedges which characterise later parliamentary enclosures, as well as most hedges which consist mainly of beech,*

[5] https://www.gov.uk/government/publications/national-character-area-profiles-data-for-local-decision-making/national-character-area-profiles#ncas-in-the-east-of-england

[6] Joint Nature Conservation Committee (2010) Handbook for Phase 1 Habitat Survey. Joint Nature Conservation Committee, Peterborough

privet or yew or non-native trees, are excluded. Recently planted species-rich hedges are included".[7]

4.4. Building Inspection

A visual inspection of the barn was carried out by Katrina Salmon during the initial site visit on 15/07/21. The search for bat roosts was not only for bats in situ, but also for the more likely droppings, urine and body oil stains, and accumulations of feeding remains (insect parts). Torches, ladders, binoculars, camera and digital endoscope were all on-hand for use. Signs of building use by barn owls and other birds were also searched for including nesting sites, feathers, droppings and pellets.

[7] Biodiversity: The UK Steering Group Report - Volume II: Action Plans (December 1995, Tranche 1, Vol 2, p243)

5. Results

5.1 Desk study

5.1.1 Local Landscape Description

The proposed development site is located to the south of the village of Terrington St John in Norfolk. Immediately north and south of the site there are residential dwellings and their associated gardens along School Road. The wider landscape is primarily arable land with scattered woodland and villages. OS map data shows there are no waterbodies located within 500m of the proposed development site.

5.1.2 Pre-existing Information on Designated Sites

There are no statutory designated sites located within 2km of the proposed development. The closest designated site is Islington Heronry SSSI, which is located 4.1km to the north-east of the proposed development site.

There are also no non-statutory designated sites (CWS) within 2km of the proposal site. The nearest non-statutory designated sites are shown in Figure 4, below.

5.1.3 Pre-existing Information on Protected and Valued Species

The data search with NBIS revealed 157 records of 35 protected and valued species within 2km of the proposal site. Records of particular relevance to the site include:

- 56 records of 21 species of birds, including a diverse mixture of woodland, wetland and farmland species. Records of note include turtle dove *Streptopelia turtur,* swift *Apus apus,* swallow *Hirundo rustica* and barn owl *Tyto alba.*
- 75 records of at least eight species of bat, including common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *Pipistrellus pygmaeus*, brown long-eared bat *Plecotus auritus*, noctule *Nyctalus noctula* and serotine *Eptesicus serotinus.*
- 26 records of other terrestrial mammals. The majority of these records (21) are of hedgehog, with small numbers of brown hare, badger and water vole also recorded.
- There are no records of any amphibians or reptiles recorded within 2km of the development site.

A search of the MAGIC database returned no records of European Protected Species (EPS) licences within 2km of the site. It also returned no records of pond surveys for GCN carried out within 2km of the site.

5.2 Site Surveys

5.2.1 Extended Phase 1 Habitat Survey

Photographs of the site are provided in Appendix 1. Due to the small scale of the site a Phase 1 Habitat Map was deemed unnecessary, and an annotated aerial map of the site has been provided in Figure 5 instead.

The majority of the site is comprised of tall ruderal vegetation, with areas of scrub in the north and an old stable in the centre of the site.

The site entrance is a gate to the west of the site, with a small strip of recently mown improved grassland and hard-standing connecting the site to School Road (Photo 1). The grassland is dominated by perennial rye grass *Lolium perenne* and also contained yarrow *Achillea millefolium*, hop trefoil *Trifolium campestre*, greater plantain *Plantago major*, dove's-foot crane's-bill *Geranium molle*, ribwort plantain *Plantago lanceolata*, cock's-foot *Dactylis glomerata*, field bindweed *Convolvulus arvensis*, white clover *Trifolium repens*, Yorkshire fog *Holcus lanatus*, creeping cinquefoil *Potentilla reptans*, groundsel *Senecio vulgaris*, black medick *Medicago lupulina* and common poppy *Papaver rhoeas* (Photo 2).

The site is mostly comprised of tall ruderal vegetation, which in the west of the site is dominated by common nettle *Urtica dioica* with creeping thistle *Cirsium arvense*, common poppy, groundsel, smooth sow thistle *Sonchus oleraceus*, black knapweed *Centaurea nigra*, perennial rye grass, broad-leaved dock *Rumex obtusifolius*, scentless mayweed *Tripleurospermum inodorum* and cow parsley *Anthriscus sylvestris* also present (Photos 3 and 4).

Surrounding the barn and further east is another area of tall ruderal vegetation which has a higher sward height and is dominated by common nettle with some cleavers *Galium aparine*, broad-leaved dock, creeping buttercup *Ranunculus repens*, ribwort plantain, scentless mayweed, Yorkshire fog, smooth sow thistle, cocksfoot, bristly ox-tongue *Helminthotheca echioides* and white campion *Silene latifolia* (Photos 5 and 6).

Along the western boundary is a post and rail fence. In the north-west of the site there is a small strip of hedgerow comprised of dog rose *Rosa canina*, hawthorn *Crataegus monogyna*, sycamore *Acer pseudoplatanus*, plum *Prunus domestica* and hazel *Corylus avellana* (Photo 7). Along the northern boundary is a Leyland Cypress *Cupressus* × *leylandi* hedgerow. The eastern boundary is marked by a ditch, which was dry at the time of survey (Photo 8). Along the southern boundary is a post and rail fence which was in poor condition.

In the east of the site are several patches of bramble *Rubus fruticosus* agg. scrub.

5.2.2 Building inspection

The barn in the centre of the site is a metal framed structure with open sides and a corrugated concrete roof (Photo 9). It looked to have previously been used as a stable building with some old horse equipment still present. The barn was very exposed and in a poor condition, with the sides falling away in places. The roof was unlined and there was no enclosed roof space (Photo 10). There were no niches which were suitable for roosting bats and as such the building was assessed as holding *negligible* potential to support roosting bats, in accordance with Bat Conservation Trust guidelines[8]. No active birds' nests were seen in the barn, but there is potential for nesting birds to make use of the structure.

Surrounding the site, there is a residential dwelling to the north, an arable field to the east and School Road to the west. To the south of the site, the tall ruderal field continues with a similar species composition and structure.

[8] Collins, J (ed) (2016). Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn.). Bat Conservation Trust, London.

5.2.3 Protected and Valued Species Potential

The hedgerows, trees and barn on site provide nesting habitat for a range of local bird species.

The site has potential habitat to support Priority Species such as hedgehog, brown hare and common toad.

The barn on site has *negligible* potential to support roosting bats. However, foraging bats occur in the local area and are likely to occur on site.

5.3 Constraints and Limitations of Survey

The site surveys experienced no notable constraints or limitations.

5.4 Expiry Dates

The Extended Phase 1 Habitat Survey and building inspection will be valid for at least one year from the date they were completed, until July 2022.

Figure 4: Designated sites within 2km, as provided by NBIS

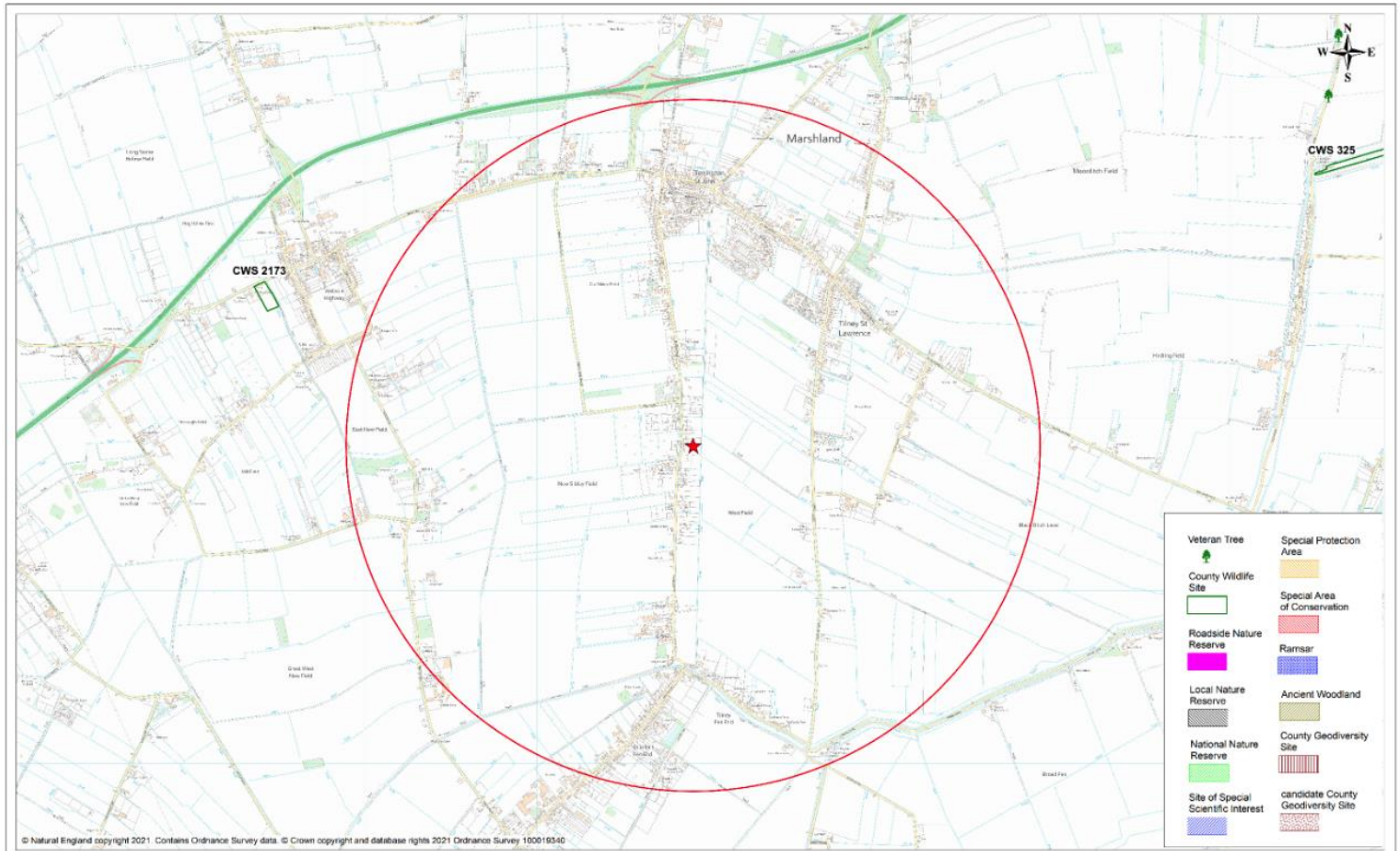
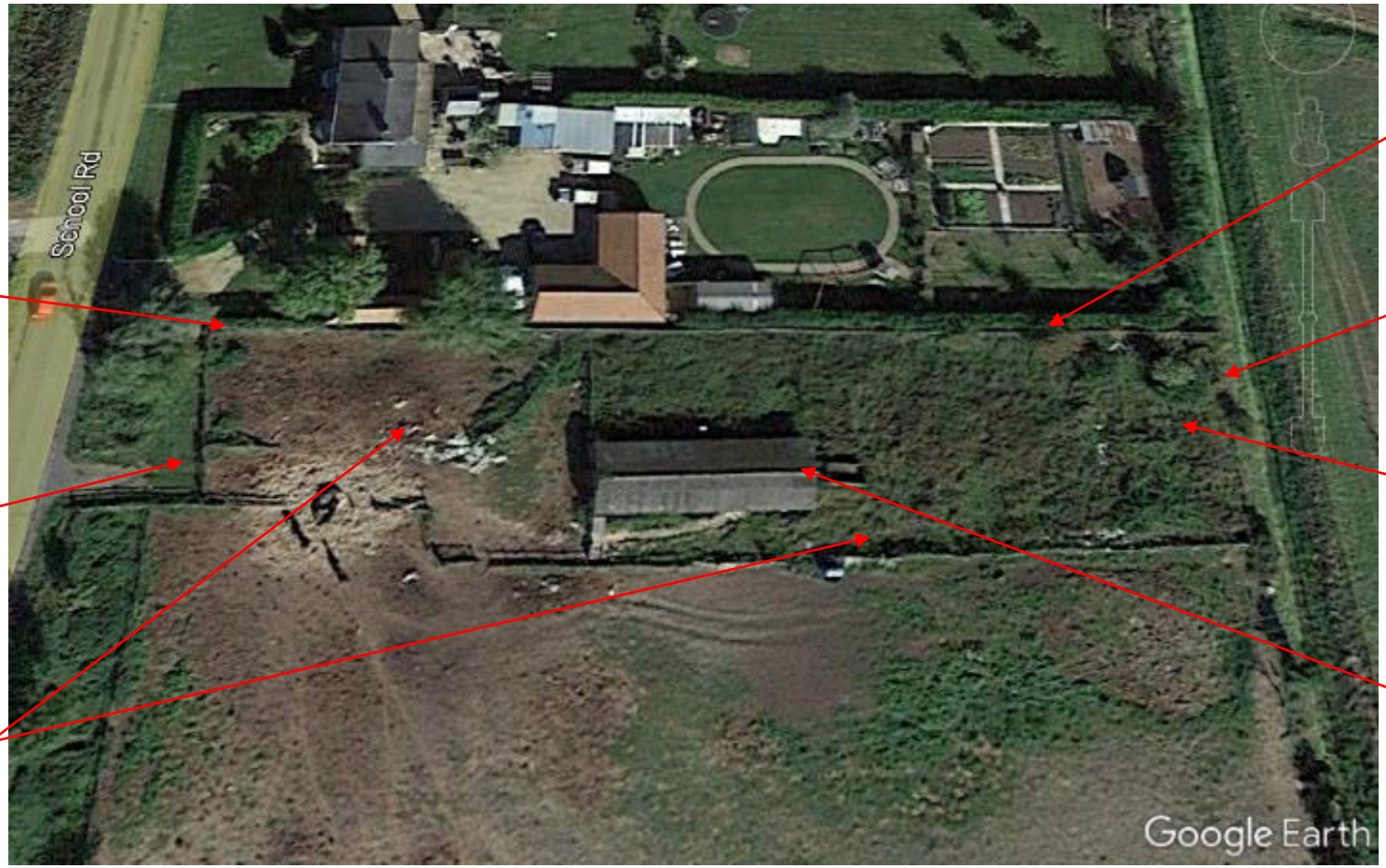


Figure 5: Annotated photograph of the site



Small section of species rich hedgerow

Site entrance

Tall ruderal habitat

Cypress hedgerow

Dry ditch

Bramble scrub

Poor condition barn/stable with negligible bat roost potential

6. Impact Assessment

6.1. Potential Impacts on Ecological Receptors

Impact assessment is made with reference to the CIEEM EcIA Guidelines[9].

Throughout, italicised words are used in the technical sense defined within the CIEEM guidance. This refers to the geographical context of the impact or effect. Hence, the following geographical frame of reference will be used to describe the ecological impacts and effects, or adapted to suit local circumstances:

- International and European
- National
- Regional
- County
- District*
- Local

*District level is not listed in the EcIA guidance, but is included within WFE reports as it is a useful and readily identifiable geographic unit.

The local geographical context for the proposal site is defined here as the civil parish of Terrginton St John in which the site is situated. The district context the Borough of King's Lynn and West Norfolk, the county context is Norfolk and the region is East Anglia.

The EcIA guidelines espouse a quantification of impact/effect magnitude where possible. Where this is not available or uncertain, impact magnitude categories and criteria are defined based on Byron (2000)[10]. These categories are often also used as shorthand to summarise magnitude.

- *Major negative* – that which has a harmful effect on the integrity of a conservation site or the conservation status of a population of a species within a defined geographical area; e.g., fundamentally reduces the capacity to support wildlife for the entirety of a conservation site, or compromises the persistence of a species' population at a defined locality.

- *Intermediate negative* – that which has no adverse effect on the integrity of a conservation site or the conservation status of a species' population, but does have an important adverse effect in terms of achieving certain ecological objectives; e.g., sustaining target habitat conditions and levels of wildlife for a conservation site, or maintaining population growth for a species.

- *Minor negative* – some minor detrimental effect is evident, but not to the extent of the above.

- *Neutral* – that which has no predictable effect.

[9]CIEEM (2018). Guidelines for Ecological Impact Assessment in the UK and Ireland: 3rd edition. Chartered Institute of Ecology and Environmental Management, Winchester

[10] Byron H. (2000). Biodiversity Impact - Biodiversity and environmental impact assessment: a good practice guide for road schemes. The RSPB, WWF-UK, English Nature and the Wildlife Trusts, Sandy

6.1.1 Positive or Negative Impacts/Effects

The nature of a predicted impact is as per CIEEM definition:

> "*Positive impact – a change that improves the quality of the environment e.g. by increasing species diversity, extending habitat or improving water quality. Positive impacts may also include halting or slowing an existing decline in the quality of the environment.*
>
> *Negative impact – a change which reduces the quality of the environment e.g. destruction of habitat, removal of species foraging habitat, habitat fragmentation, pollution.*"

6.2 Duration of Impact/Effect

Impacts/ effects are described as short-, medium- or long-term, and as either permanent or temporary.

6.3 Impact/Effect Reversibility

Reversibility is judged per the CIEEM Guidelines for Ecological Impact Assessment description:

> "*An irreversible effect is one from which recovery is not possible within a reasonable timescale or there is no reasonable chance of action being taken to reverse it. A reversible effect is one from which spontaneous recovery is possible or which may be counteracted by mitigation.*"

6.4 Impact/Effect Significance

The CIEEM Guidelines for Ecological Impact Assessment provide a working definition of 'significant effects' which includes the statements:

> *"For the purpose of EcIA, 'significant effect' is an effect that either supports or undermines biodiversity conservation objectives for 'important ecological features' or for biodiversity in general." and "In broad terms, significant effects encompass impacts on structure and function of defined sites, habitats or ecosystems and the conservation status of habitats and species (including extent, abundance and distribution)."*

In this assessment, a significant impact is not attributed to any effect on a receptor which is predicted to occur at no greater than minor negative magnitude. Similarly any impact, regardless of magnitude, is not regarded as significant if its geographic scale of importance is lower than a local/ parish level.

6.5 Description of Impacts/Effects

A number of impacts/ effects on ecological receptors may result from the proposed development.

6.5.1 Change of Land Use

The proposed development will convert the barn on site, which has previously been used as a stable, into a residential dwelling. The site will have to be mostly cleared to make way for new gardens and parking. The site will be accessed via the small grassy track to the west of the site. The hedgerows in the north of the proposed development

are expected to remain on site through to post-development. This change of land use may cause some species currently present to abandon use of the site. Other species may be attracted to the new habitats on site, particularly those which thrive in residential areas.

6.5.2 Construction Activities

The activity, noise and other general disturbance from movements of construction machinery and personnel could disturb animal species using the site or immediately adjacent areas. Impacts need to be viewed in the context of the existing baseline; the proposal site is part of a residential and larger arable area. There will be a moderate existing level of disturbance from the surrounding houses and agricultural landscape and associated activities.

6.5.3 Operational Activities

Once constructed, there will be an increase in the local population and associated recreational activities, which may include use of adjacent open spaces, increased vehicle use and other indirect impacts such as predation by pets and light pollution. These impacts need to be viewed in the context of a proportionally small addition to housing within the village of Terrington St John. There were 891 usual residents on Census day 2011[11].

6.6 Designated Sites and Sites of Ecological Value

The proposed development is relatively small in scale and is within an existing residential and agricultural area. The proposal site is separated from the nearest designated sites by over 2km of predominantly arable land, and therefore there is not considered to be realistic potential for impacts to designated sites during construction.

The proposed development will lead to a minor increase to the local population of Terrington St John, which could have corresponding impacts on nearby designated sites. However, given the separation distances between the proposed development site and the nearest designated sites, there is considered to be no realistic potential for a negative impact. Furthermore, the development would give rise to a proportionately very minor increase in the local population which would be unlikely to have a discernible impact on any designated sites even if new residents do travel to any such site.

6.7 Habitats

The area which is outlined for clearance to make way for new landscaping is comprised of tall ruderal vegetation and scrub. Both are of low to moderate ecological value, with similar habitat readily available in the wider landscape. The scrub on site is likely to provide habitat for a range of invertebrates, small mammals and possibly breeding birds. This habitat is expected to be completely cleared to accommodate the proposed development, and this habitat loss will have a *minor negative* impact on habitat provision at the local scale. In order to prevent any harm to species using the scrub and ensure similar habitat is available on the site post-development, mitigation is required.

The tall ruderal vegetation on site has a variety of structures and contains a number of common herb species, which means it is suitable for a variety of invertebrates. These invertebrates will support other animals such as birds and small mammals (possibly

[11] https://www.nomisweb.co.uk/reports/localarea?compare=E04009481

including bats) which feed on them. This habitat is expected to be completely cleared to accommodate the proposed development and this habitat loss is likely to have a *minor negative* impact on habitat provision at the local scale. Best practice advice for the clearing the site is outlined below and compensatory replanting advice for any new grassland areas on the site is provided.

The native-species hedgerows bordering the site (i.e. all hedgerows other than the Leyland cypress hedge) are ecologically valued features due to the relatively high levels of biodiversity they support, both in terms of the flora present and the animals which will use these habitats for nesting, shelter, commuting and feeding. All of these habitats are due to be retained through to post development. If any vegetation removal is required, mitigation will be necessary in order to prevent a *minor negative* impact.

6.8 Bats

6.8.1 Roosting Bats

The building and the trees on site have *negligible* potential to support roosting bats. *Neutral* impacts to roosting bats are therefore expected.

6.8.2 Foraging Bats

Bats are known to occur in the local area, and it is likely that foraging and commuting bats will occasionally occur on and near the site. Insensitive night-lighting both during construction and operation could disrupt foraging or commuting bats and other nocturnal species using the site. This could lead to *minor negative* impacts in the long term, and best practice mitigation measures are advised.

6.9 Great Crested Newts

There are no waterbodies located within 500m of the proposed development and no records of GCN were returned by the data search. GCN are therefore expected to be absent from the proposed development site and *neutral* impacts are predicted.

6.10 Breeding Birds

The trees, hedgerows and scrub on site provide suitable habitat for a variety of local bird species, including red and amber listed BoCC. Current plans do not indicate the removal of the hedgerow or any trees, and so *negligible* impacts are expected. If the removal of trees and hedgerows is required as part of the development, it would have *minor negative* impacts on local populations in the long-term without mitigation, and could damage or destroy an active nest which would constitute a legal offence. Likewise breeding birds could make use of the barn and there is a loss of suboptimal habitat as a result of the development. Mitigation is required to provide further nesting opportunities on the developed site and prevent the destruction of any active nests in the barn.

The potential for disturbance and displacement of nesting birds during the construction works and eventual occupation of the residential development is unlikely as the site is part of a larger agricultural area. Any birds nesting on or around the site will have become habituated to a degree of human disturbance from the current farming activities and roads, so any increase in disturbance is considered extremely unlikely to have even a *minor negative* impact in terms of disturbing or displacing nesting birds. As a precaution, some avoidance and mitigation measures are outlined below, aimed at reducing the risks to nesting birds.

In the longer term, the new residential development could include features such as hedgerows, trees and shrubs which could be used for nesting. Advice regarding enhancement of the developed site for birds is provided below.

6.11 Badgers

There were no signs of badger on the proposal site. There was one record of a badger returned by the data search and it is possible that badgers would forage on the fields to the north and around the site boundaries, possibly including within the site. However, badgers would easily be able to avoid the development site and continue to forage locally, where alternative habitats are abundant. Overall, the development is judged to be almost certain to have a *neutral* impact on local badger populations through loss of foraging habitat and disturbance during both construction and operation of the residential development.

Some standard best practice measures are proposed during construction to minimise the risk of direct harm that this phase of the development could pose to transient badgers and other terrestrial animals, in the unlikely event that they do venture onto the site.

6.12 Reptiles

The data search revealed no records of reptiles within 2km and the site is isolated from suitable reptile habitat, as it is surrounded by large arable fields. It is unlikely, but possible, that transient individuals of some species (such as grass snake) may occasionally occur on the site. *Minor negative* impacts could occur in the short term if individuals were to come into contact with the works. Best practice measures are advised which will mitigate the risks of impacts to terrestrial species.

6.13 Priority Species

The data search returned some records of hedgehogs in the local area. The site provides some suitable habitat for hedgehogs, and individuals could be killed or injured if they came into contact with construction measures, leading to *minor negative* impacts to local populations in the short-term. Other Priority Species such as common toad and brown hare are also likely to occasionally occur on the site, and best practice mitigation measures for terrestrial species will reduce *minor negative* impacts in the short-term.

In the long-term, there will be a loss of a small area of foraging habitat for hedgehogs and other Priority Species such as toads and hares. However, given the small scale of the loss and the abundant similar habitat in the surrounding landscape, the impacts are anticipated to be *negligible* on a local scale.

7. Mitigation

7.1 General Principles

The Mitigation Hierarchy is a key principle, with the sequential strategies given in order. This is interpreted by WFE, as it applies to built development, in Table 1 below.

Table 1: Mitigation Hierarchy

Action and sequential number	Description
1. Avoidance	The first stage is to seek options that avoid impacts/effects on ecological receptors, for example through adjusting the development footprint to avoid valued/sensitive features, or confining works to certain times of the year or the day when a receptor would not be impacted. An example would be adjusting a development footprint to avoid a hedgerow, thereby allowing it to be retained; this avoids impacting hedgerow habitat.
2. Mitigation	Where potential adverse impacts cannot be avoided, the next stage is to use measures aimed at reducing/ameliorating the magnitude and/or likelihood of impacts/effects, such as through the design of the project or specific working practices. An example would be restricting hedgerow removal to those sections which are of lower ecological value, thereby allowing relatively higher value sections of hedgerow to be retained; this reduces the magnitude of the impact on hedgerow habitat.
3. Compensation	Where significant residual adverse impacts cannot be satisfactorily avoided or mitigated, the next stage is to use appropriate measures which subsequently offset, repair, reinstate or compensate for the predicted impact/effect. An example would be replanting a hedgerow after it has been removed; this compensates for the impact on hedgerow habitat after it has happened.
Enhancement	The final stage of the Mitigation Hierarchy is distinct in that it does not seek to solely address adverse impacts; it goes over and above requirements for avoidance, mitigation and compensation. In accordance with the NPPF, developments should achieve net gains in biodiversity even if adverse impacts are not anticipated. Enhancement measures are those which seek to provide net benefits for biodiversity, and are advised wherever appropriate; this may include enhancements for receptors which are otherwise expected to experience adverse impacts.

7.2. Habitats

The vegetation on the site will be gradually cut back prior to major ground clearance works. Vegetation cuts will commence in the north of the site and work progressively southwards. Completing the cuts in this way will ensure that most animals will be able to move away from the cutting and into the surrounding habitats, rather than being harmed or killed at the time the site is fully cleared.

All vegetation cuttings will be removed from the site rather than left in-situ to decompose. Leaving piles of cut vegetation on the site could encourage animals such as small mammals and amphibians to venture onto the site.

Any areas outlined for greenspace around the building will be re-seeded with a diverse mixture of species to include at least four species of grass and eight species of herbs, such as a meadow grassland seed mixture. An Emorsgate EM1[12] Special General Meadow Mixture seed mixture, or similar, would be suitable for this site.

New hedgerows will be planted around the site boundaries to mitigate the removal of bramble scrub on site. Hedgerows will include a mixture of at least six native species in order to maximise wildlife value. Hedgerow plants will be specimens at least 30cm tall at the time of planting. Planting will be in species clusters of three or five at random intervals along the hedge for all species except hawthorn. Clear plastic guards will be used as rabbit protection and will be removed and disposed of once the shrub has become established. Non-native species such as Leyland cypress and cherry laurel *Prunus laurocerasus* will not be used, as they can cause acidification of the surrounding soil and overshadowing of nearby vegetation, and are of relatively low ecological value. Suitable native species include:

Beech *Fagus sylvatica*
Blackthorn *Prunus spinosa*
Crab apple *Malus sylvestris*
Dog rose *Rosa canina*
Dogwood *Cornus sanguinea*
Elder *Sambucus nigra*
Field maple *Acer campestre*
Guelder rose *Viburnum opulus*
Hawthorn *Crataegus monogyna*
Hazel *Corylus avellana*
Holly *Ilex aquifolium*
Hornbeam *Carpinus betulus*
Oak *Quercus robur*
Small-leaved lime *Tilia cordata*
Spindle *Euonymus europaeus*
Wild cherry *Prunus avium*

7.3 Breeding Birds

The removal of any trees or other woody vegetation, including the bramble scrub on site, will be done outside of the main bird nesting season (which runs from 1st March – 31st August) to ensure that no active birds' nests are damaged or destroyed. Conversion or demolition of the barn on site will also commence outside of the main nesting season to reduce the risk of encountering any active birds' nest.

If this is not possible, any vegetation requiring removal during the March to August period must be thoroughly checked for active birds' nests by a suitably qualified person (i.e. an ecologist) prior to the works, and the removal of the vegetation would then only be permissible if this check confirms that there are no active birds' nests within them. The barn must be subject to the same precautions if it is to be demolished or structural works commenced during the March to August period. A Construction Exclusion Zone (CEZ) (e.g. 10m) will be set up around any active nests until they have reached their natural conclusions, which would be confirmed by subsequent checks.

[12] https://wildseed.co.uk/mixtures/view/4/special-general-purpose-meadow-mixture

This approach is only possible for small areas of scrub/trees; if large areas of woody vegetation are outlined for removal this must take place outside of the breeding bird season.

7.4 Best Practice Measures

Best practice measures are advised for effects which, although often not predicted to be of great magnitude, may affect valued ecological receptors in a way that would be preventable and/or a legal offence. The measures that will be applied to mitigate for potential ecological impacts are as follows:

- The impact on foraging bats and other nocturnal species posed by the proposal consists of disturbance through lighting at night. Night-lighting of the whole site will be avoided wherever possible, or sensitively designed if it is essential. The use of movement sensors such as Passive Infra-Red (PIR) sensors installed on lights can ensure that they come on only when needed and avoid unnecessary constant illumination. Positioning lights at angles of not greater than 90˚to the ground (i.e. facing directly downwards) can reduce overspill of light and sky glow, which can disrupt the nocturnal behaviours of bats and insects[13].

- Bats are small and highly mobile mammals which can use a range of roosting sites, some of which can be small and used infrequently. In the unlikely event that a bat is found during works, construction work will cease until advice has been sought from a professional ecologist and the ecologist has confirmed that it is acceptable for works to restart.

- All construction materials and waste will be stored above ground, such as on pallets or in skips to avoid providing suitable habitat for amphibians and other small terrestrial animals.

- Any boundary fences/walls on the developed site will have a small gap at ground level (approximately 13cm wide by 13cm high) on each boundary section. This will allow small terrestrial animals such as hedgehogs to access the site freely. The ground level gaps should be installed both within and around the site, to allow animals to both access the site from outside and move freely within the site.

- Excavations will not be left open overnight, or else will be fitted with egress boards sloped at a shallow angle (<40˚) or have shallow battered/sloped edges (also <40˚) to allow any animals which fall in to climb out. Preferably all excavations will be backfilled at the end of each working day or covered overnight to prevent animals from falling in.

- Works will be restricted to daylight hours only to prevent disturbance or accidental harm to animals which typically forage at night such as amphibians. Ideally night lighting of the site will be minimised to reduce disturbance to other nocturnal animals such badgers, hedgehogs, bats and moths.

- In the unlikely event that a protected species is discovered on site during the course of the works, all work will cease immediately and a suitably qualified ecologist will be contacted promptly for advice. Work will not recommence until the ecologist has confirmed in writing that it will be acceptable to do so.

[13] Stone, E.L. (2013). Bats and lighting: Overview of current evidence and mitigation guidance

8. Enhancements

8.1 Bats

It is advised that at least one bat roost box is installed within the development. Built-in/structurally integrated roost boxes will be used rather than superficially-mounted/exterior boxes. A range of cavity roost boxes and crevice roost boxes are suitable, such as the Schwegler 2F, 2FN, 1FF, 1FD, 1FS or the Nestbox Company's Improved Cavity Bat Box model, or other products of similar design, lifespan and demonstrated effectiveness. Commercially available boxes will be provided with appropriate instructions for most effective installation, which will be followed.

Bat boxes are more likely to be used by bats if installed on warmer aspects of the buildings, such as south, west or east sides. Installing boxes on a range of different building aspects provides a range of thermal conditions for bats to use throughout the year. Bat roost boxes will provide superior roosting opportunities if installed in close proximity to gardens and other green spaces, and away from sources of disturbance such as roads, parking spaces and any exterior lighting.

8.2 Birds

At least one bird nest box will be installed as an integral part of the new buildings. Boxes will be positioned on buildings away from any from doors and light, ideally located on an overhanging eave of the building. The box/boxes should target a species of conservation concern such as swift *Apus apus,* house sparrow *Passer domesticus* or house martin *Delichon urbicum* (all UK BoCC Red and Amber listed species). Boxes designed specifically for these species are commercially available and will be provided with further, detailed instructions for effective installation.

East, west and north sides of buildings are most suitable for the installation of bird nest boxes. In general, bird boxes should be placed under overhanging eaves or other building feature which provide shelter, overlooking gardens or other green spaces, and with a clear/unobstructed flight line for easier access and egress.

8.3 Habitats and General Biodiversity

Trees provide a wide variety of benefits such as visual amenity, habitat, shade, carbon capture, improved air quality and many more. Three new trees would appropriately enhance the site. For the purposes of this ecological report, the focus is on maximising the habitat value of the trees to wildlife; therefore any trees used should be native and of local provenance, as listed below.

Common pear *Pyrus communis*
Crab apple *Malus sylvestris*
Field maple *Acer campestre*
Holly *Ilex aquifolium*
Horse chestnut *Aesculus hippocastanum*
Rowan *Sorbus aucuparia*
Silver birch *Betula pendula*
Whitebeam *Sorbus aria*
Wild cherry *Prunus avium*

Where new trees or hedges are proposed it is advised that a Tree Planting Plan is produced detailing the number, location and species of trees to be planted. This plan should have input from an Arboriculturist in addition to members of the design team

such as a Landscape Architect, particularly where planting is proposed near to hard surfacing. Selecting appropriate tree species for planting in suitable locations will ensure that the tree can thrive, reach its full potential and achieve its mitigation purpose (if applicable) in the long-term.

9. Conclusions

This report has examined the potential impacts of a proposed residential development on valued ecological receptors, based on an Extended Phase 1 Habitat Survey, building inspection and a desk study.

The proposed development poses low risks of impacting most protected and valued species due to the unsuitability of the existing habitats and expected avoidance of the site by such species. For the small number of protected and valued species which could feasibly occur on or close to the site, such as breeding birds, the risks of negative impacts can all be satisfactorily addressed by adopting the advised mitigation measures.

Advice on ecological enhancement of the site is provided. Assuming the mitigation and enhancement measures outlined in this report are fully adopted, the proposal would be expected to have a positive impact for nesting birds and roosting bats.

Appendix 1. Photographs

Photo 1: View east of access gateway into site

Photo 2: View west of grass and hard-standing access area directly adjacent to School Road

Photo 3: View west of tall ruderal habitat

Photo 4: View east of overgrown tall ruderal habitat and old stable building

Photo 5: View of tall ruderal vegetation to the rear of the barn

Photo 6. View of tall ruderal vegetation to the rear of the barn

Photo 7: Hedgerow in the south-east of the site

Photo 8: View of dry ditch along eastern boundary of the site

Photo 9. View of the exterior of the old stables in the centre of the site

Photo 10. View of the interior of the barn with no enclosed roof space